

[0023] Referring to FIG. 1, the mobile terminal 100 may include a foldable display unit 101, a frame 190 enclosing the display unit 101, a hinge unit 170 enabling the display unit 101 to be folded and unfolded, and a touch sensor (not shown) attached on the display unit 101.

[0024] As explained hereinafter, the mobile terminal 100 having the above configuration may perform a preset function according to the folding angle of the display unit 101, and may provide a convenient user interface that enables systematic interworking of application programs running on two display zones.

[0025] The display unit 101 is foldable, and outputs a screen related to a function of the mobile terminal 100. For example, the display unit 101 may output a boot screen, an idle screen, a menu screen, or a program activation screen. The display unit 101 may be realized using flexible liquid crystal display (FLCD) technology, and may include an LCD controller, a memory storing data, and LCD elements. In particular, the display unit 101 may be partially or completely folded relative to the hinge unit 170. That is, two adjacent display zones of the display unit 101 may form an angle of zero to 360 degrees with each other. The display unit 101 may include a first touch screen 110 and a second touch screen 120. The first touch screen 110 and the second touch screen 120 are joined together at one side, and they appear as a single wide screen when completely unfolded at a folding angle of 180 degrees. Each of the first touch screen 110 and the second touch screen 120 may be composed of a display panel and a touch sensor arranged on the display panel.

[0026] The frame 190 encloses the foldable display unit 101, and supports folding of the display unit 101 utilizing the hinge unit 170. In addition to the display unit 101 and the hinge unit 170, the frame 190 provides a space in which a printed circuit board containing a control unit, storage unit, audio processing unit and interface unit can be mounted. The frame 190 may be made of a sash or plastic material. The frame 190 may include a coupling mechanism such as a hook that fixes the display unit 101 when the display unit 101 is completely folded at a folding angle of 0 or 360 degrees. When the first touch screen 110 and the second touch screen 120 each include an LC display panel, the frame 190 may further provide a space to accommodate a backlight unit for lighting the LC display panel and optical sheets for diffusing and concentrating light.

[0027] The hinge unit 170 placed on the frame 190 enables folding of the frame 190 and the foldable display unit 101. In fact, as the frame 190 accommodates the display unit 101, folding of the frame 190 results in folding of the display unit 101. That is, when the user folds the frame 190 with respect to the hinge unit 170, the display unit 101 is folded accordingly. The hinge unit 170 may support a rotation corresponding to the maximum folding angle of the display unit 101. Next, a detailed description is given of the mobile terminal 100.

[0028] FIG. 2 is a block diagram of the mobile terminal 100. In the description, it is assumed that the mobile terminal 100 has two display zones, each of which is composed of a touch screen. However, it should be noted that the teachings of the present invention may apply to a terminal having additional number of display zones.

[0029] Referring to FIG. 2, the mobile terminal 100 includes a first touch screen 110, a second touch screen 120, an audio processing unit 130, an interface unit 140, a storage unit 150, a hinge unit 170 accommodating an angle sensor 180, and a control unit 160.

[0030] The mobile terminal 100 having the above configuration may sense the folding angle of the display panel through the angle sensor 180 in the hinge unit 170, and selectively control the activation of application programs and the operation of an activated application program on the basis of the sensed folding angle.

[0031] The first touch screen 110 may include a display panel to produce images under the control of the control unit 160, and a touch sensor to generate input signals corresponding to touch events of the user. The first touch screen 110 is accommodated in the frame so as to be rotatable at a preset angle relative to the hinge unit. The first touch screen 110 may display various screens, such as an application related screen for activating one of application programs stored in the storage unit 150, a photograph related screen for browsing photographs, a message screen for composing a message or memo, and an icon screen for icons associated with various menu items. The first touch screen 110 detects a touch event occurring at a point in a displayed screen and sends the detected touch event to the control unit 160. The first touch screen 110 is adjacent to the second touch screen 120 and is joined thereto.

[0032] The second touch screen 120 may have the same structure as that of the first touch screen 110. Under the control of the user or the control unit 160, the second touch screen 120 may output the same screen as that of the first touch screen 110 or may output a screen different from that of the first touch screen 110. For example, while the first touch screen 110 displays a screen related to an activation of a first application program, the second touch screen 120 displays another screen related to an activation of a second application program. Alternatively, the first touch screen 110 and the second touch screen 120 may display different screens related to the same application program. For example, when the first touch screen 110 outputs video images related to playback of a video file, the second touch screen 120 may display a screen containing buttons for controlling playback of the video file. The second touch screen 120 is adjacent to the first touch screen 110 and is joined thereto. Utilization of the first touch screen 110 and the second touch screen 120 is further detailed later.

[0033] The audio processing unit 130 includes a speaker SPK to reproduce audio data received during a call, and a microphone MIC to collect an audio signal such as a voice signal of the user. In particular, the audio processing unit 130 may reproduce an audio signal of an application program executed according to the folding angle of the display unit 101. For example, when an audio file is mapped to a specific folding angle of the display unit 101, folding the display unit 101 at the folding angle may cause the audio file to be played back through the audio processing unit 130 under the control of the control unit 160.

[0034] The interface unit 140 provides a communication path leading to another mobile terminal or an external memory chip. The interface unit 140 may act as a radio frequency unit for wireless communication, and may act as an USB (universal serial bus) interface or UART (universal asynchronous receiver/transmitter) interface for serial communication. The interface unit 140 may establish a communication channel to one of an external mobile terminal, a memory chip, a mobile communication system and an Internet network, and may receive a content such as an image file or an audio file through the communication channel. The